

**INTEGRATED MICRO CHANNELS AND MANIFOLD/PLENUM USING
SEPARATE SILICON OR LOW-COST POLYCRYSTALLINE SILICON**

Abstract of the Disclosure

5 A method and apparatus for cooling an electronics chip with a cooling plate
having integrated micro channels and manifold/plenum made in separate single-
crystal silicon or low-cost polycrystalline silicon. Forming the microchannels in the
cooling plate is more economical than forming the microchannels directly into the
back of the chip being cooled. In some embodiments, the microchannels are high-
10 aspect-ratio grooves formed (e.g., by etching) into a polycrystalline silicon cooling
base, which is then attached to a cover (to contain the cooling fluid in the grooves)
and to the back of the chip.

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